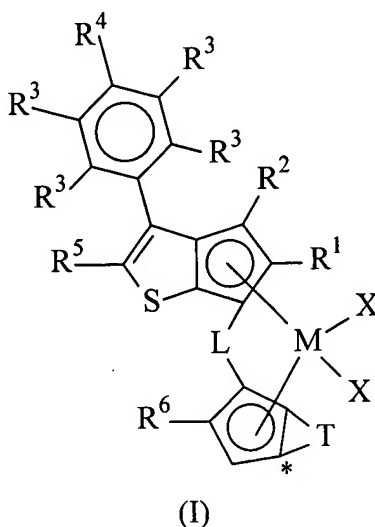


## AMENDMENTS TO THE CLAIMS

1. (previously presented) A process for producing a polymer of ethylene containing from 0.1 to 99 % by mol of at least one derived unit of alpha-olefins of formula  $\text{CH}_2=\text{CHZ}$ , wherein Z is a  $\text{C}_2\text{-C}_{20}$  alkyl radical, and optionally from 0 to 5% by mol polyene, comprising contacting, under polymerization conditions, ethylene, at least one alpha-olefin and optionally said polyene, in the presence of a catalyst system obtained by contacting:
- a) a metallocene compound of formula (I):



wherein

M is zirconium, hafnium or titanium;

X, equal to or different from each other, is a hydrogen atom, a halogen atom, an R, OR, OR'O,  $\text{OSO}_2\text{CF}_3$ , OCOR, SR,  $\text{NR}_2$  or  $\text{PR}_2$  group, wherein R is a linear or branched, saturated or unsaturated  $\text{C}_1\text{-C}_{20}$ -alkyl,  $\text{C}_3\text{-C}_{20}$ -cycloalkyl,  $\text{C}_6\text{-C}_{20}$ -aryl,  $\text{C}_7\text{-C}_{20}$ -alkylaryl, or  $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; and the R' substituent is a divalent group selected from  $\text{C}_1\text{-C}_{40}$ -alkylidene,  $\text{C}_6\text{-C}_{40}$ -arylidene,  $\text{C}_7\text{-C}_{40}$ -alkylarylidene or  $\text{C}_7\text{-C}_{40}$ -arylalkylidene radicals; two X can join to form a  $\text{C}_4\text{-C}_{40}$  dienyl ligand;

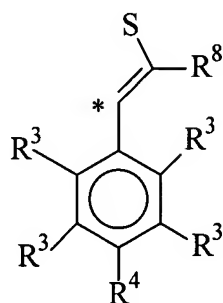
$\text{R}^1$  is a linear or branched, saturated or unsaturated  $\text{C}_1\text{-C}_{20}$ -alkyl,  $\text{C}_3\text{-C}_{20}$ -cycloalkyl,  $\text{C}_6\text{-C}_{20}$ -aryl,  $\text{C}_7\text{-C}_{20}$ -alkylaryl, or  $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

$R^2$ ,  $R^3$ ,  $R^4$  and  $R^5$ , equal to or different from each other, are hydrogen atoms, halogen atoms or linear or branched, saturated or unsaturated  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

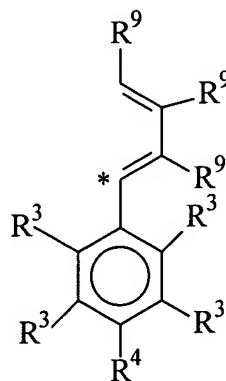
$R^6$  is a linear or branched, saturated or unsaturated  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

L is a divalent bridging group selected from  $C_1$ - $C_{20}$  alkylidene,  $C_3$ - $C_{20}$  cycloalkylidene,  $C_6$ - $C_{20}$  arylidene,  $C_7$ - $C_{20}$  alkylarylidene, or  $C_7$ - $C_{20}$  arylalkylidene radicals, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, or a silylidene radical containing up to 5 silicon atoms;

T is a divalent radical of formula (II) or (III):



(II)



(III)

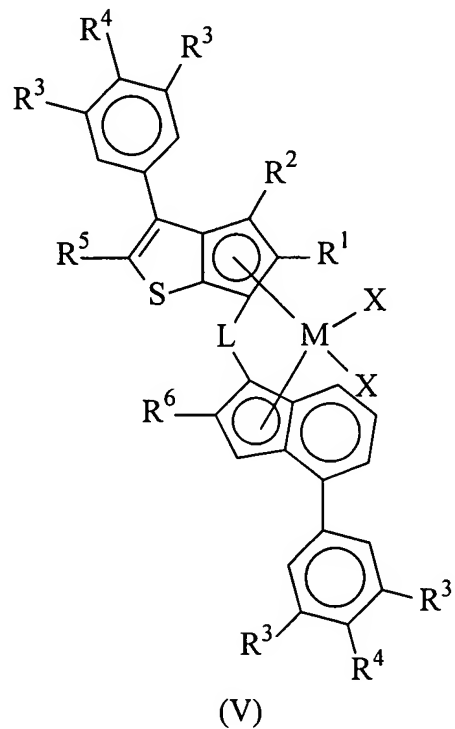
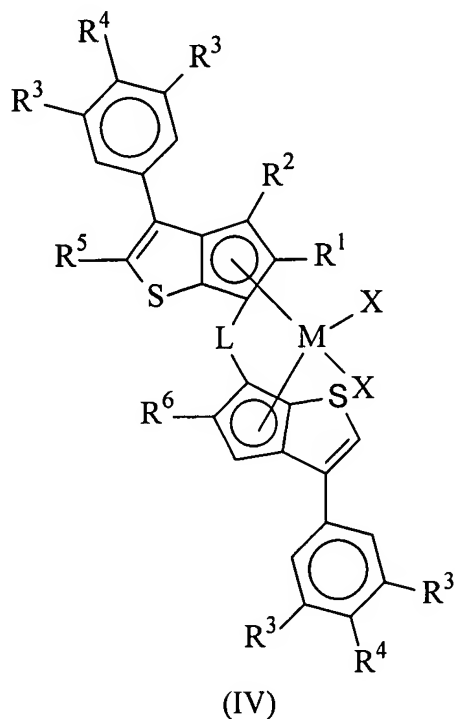
wherein

the atom marked with the symbol \* is linked to the atom marked with the same symbol in the compound of formula (I);

$R^8$  is a hydrogen atom or a linear or branched, saturated or unsaturated  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

$R^9$ , equal to or different from each other, is a hydrogen atom or a linear or branched, saturated or unsaturated  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; and

- b) an alumoxane or a compound that forms an alkyl metallocene cation.
- (original) The process according to claim 1 wherein the catalyst system further comprises an organo aluminum compound.
  - (previously presented) The process according to claim 1 wherein in the compound of formula (I),  
X is a halogen atom, an R, OR'O or OR group; R<sup>1</sup> is a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub>-alkyl radical; R<sup>2</sup> is a hydrogen atom; R<sup>3</sup> is a hydrogen atom or a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub>-alkyl radical optionally containing at least one halogen atom; R<sup>4</sup> is a hydrogen atom or a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub>-alkyl radical; R<sup>6</sup> is a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub>-alkyl radical; L is Si(CH<sub>3</sub>)<sub>2</sub>, SiPh<sub>2</sub>, SiPhMe, SiMe(SiMe<sub>3</sub>), CH<sub>2</sub>, (CH<sub>2</sub>)<sub>2</sub>, (CH<sub>2</sub>)<sub>3</sub>, C(CH<sub>3</sub>)<sub>2</sub>, C(Ph)<sub>2</sub> or C(CH<sub>3</sub>)(Ph); R<sup>8</sup> is hydrogen or a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub>-alkyl radical; and R<sup>9</sup> is hydrogen or a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub>-alkyl radical.
  - (previously presented) The process according to claim 1 wherein the metallocene compound has formula (IV) or (V):



wherein

$R^3$  is a hydrogen atom or a linear or branched, saturated or unsaturated  $C_1$ - $C_{10}$ -alkyl radical, optionally containing at least one halogen atom;  $R^4$  is a hydrogen atom or a linear or branched, saturated or unsaturated  $C_1$ - $C_{10}$ -alkyl radical.

5. (original) The process according to claim 4 wherein, in the compounds of formula (IV) and (V),  $R^3$  is a hydrogen atom or a group  $-C(R^7)_3$ , wherein  $R^7$ , equal to or different from each other, is a linear or branched, saturated or unsaturated  $C_1$ - $C_8$ -alkyl radical; and  $R^4$  is hydrogen or a group  $-C(R^7)_3$ .
6. (previously presented) The process according to claim 1 wherein, in the compounds of formula (I),  $R^3$  and  $R^4$  are hydrogen atoms.
7. (previously presented) The process according to claim 1 wherein, in the compounds of formula (I), when  $R^3$  is an hydrogen atom,  $R^4$  is a linear or branched, saturated or unsaturated  $C_1$ - $C_{10}$ -alkyl radical, optionally containing at least one halogen atom; or when  $R^3$  is a linear or branched, saturated or unsaturated  $C_1$ - $C_{10}$ -alkyl radical optionally containing at least one halogen atom,  $R^4$  is an hydrogen atom.
8. (previously presented) The process according to claim 1 wherein the catalyst system is supported on an inert carrier.
9. (previously presented) The process according to claim 8 wherein the inert carrier is a polyolefin.
10. (previously presented) The process according to claim 1 wherein the process is carried out in gas phase.
11. (previously presented) The process according to claim 1 wherein the alpha-olefin is 1-pentene, 1-hexene or 1-octene.
12. (previously presented) The process according to claim 4 wherein, in the compounds of formulas (IV) and (V),  $R^3$  and  $R^4$  are hydrogen atoms.
13. (previously presented) The process according to claim 4 wherein, in the compounds of formulas (IV) and (V), when  $R^3$  is an hydrogen atom,  $R^4$  is a linear or branched, saturated or unsaturated  $C_1$ - $C_{10}$ -alkyl radical, optionally containing at least one halogen atom; or when  $R^3$  is a linear or branched, saturated or unsaturated  $C_1$ - $C_{10}$ -alkyl radical optionally containing at least one halogen atom,  $R^4$  is an hydrogen atom.